



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/929,961	08/15/2001	Frank Duvinage	MB 406	2156
27956	7590	02/16/2007		
KLAUS J. BACH 4407 TWIN OAKS DRIVE MURRYSVILLE, PA 15668			EXAMINER HANDAL, KAITY V	
			ART UNIT	PAPER NUMBER
			1764	

  

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/16/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

## Office Action Summary

Application No.

09/929,961

Applicant(s)

DUVINAGE ET AL.

Examiner

Kaity Handal

Art Unit

1764

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 29 March 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☐ Claim(s) \_\_\_\_\_ is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 20-27 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 March 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 20-23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 20, it is unclear as to what applicants are attempting to recite; the preamble recites a diesel engine, however, the claim lacks means to perform the functions of the diesel engine and therefore the claim is incomplete and non-function.

In claims 21-23, the language of the claim is directed to method limitation which renders the claim vague and indefinite as it is unclear as to what structural limitation applicants are attempting to recite.

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 20-27 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for the purification of the exhaust gas, does not reasonably provide enablement for the diesel engine presented in claim 20. The

Art Unit: 1764

specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to use the invention commensurate in scope with these claims. Is the inventor claiming an engine or an engine's exhaust purification system?

***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 20-23 and 25 are rejected under 35 U.S.C. 102(e) as being anticipated by Khair et al. (US 6,293,096).

With respect to claim 20, Khair teaches an exhaust gas cleaning system (fig. 1) and a control unit (54), said exhaust gas purification system including a particle filter (32), a nitrogen oxide store (22) arranged upstream of said particle filter (32) (as illustrated), an oxidation catalytic converter (14) arranged upstream of at least one of the nitrogen oxide store (22) and the particle filter (32) (as illustrated), and a sensor arrangement (50) connected to the control unit (54), said control unit (54) being designed to control, on the basis of values provided by the sensor arrangement (50), a regeneration of the nitrogen oxide store and of the particle filter (col. 5, lines 30-37)

Art Unit: 1764

at exhaust gas temperatures of 400°C to 700°C/(high temperatures) (col. 5, lines 42-50) in such a way that, in a combination of a sulfur/NO<sub>x</sub> regeneration of the nitrogen oxide store, wherein sulfur/NO<sub>x</sub> deposited in the nitrogen oxide store is released, with a soot/(carbon) regeneration of the particle filter (32), wherein soot/(carbon) collected in the particle filter (32) is burned off, is provided for by: a) the sulfur/(nitrogen) regeneration of the nitrogen oxide store (22) being followed immediately by the soot/(carbon) regeneration of the particle filter (32) (col. 5, lines 14-30).

Khair teaches a nitrogen oxide store (22) which contains a NO<sub>x</sub> trap and does not explicitly teach that said nitrogen oxide store adsorbs SO<sub>3</sub> in addition to NO<sub>x</sub> and that said NO<sub>x</sub> trap is sulfur regenerated. However, Khair does teach that his NO<sub>x</sub> trap (22) is regenerated by increasing the amount of fuel injected (col. 2, lines 25-38 and lines 55-65) thereby increasing the temperature of said NO<sub>x</sub> trap and releasing NO<sub>x</sub> and SO<sub>3</sub>. Since Khair's apparatus has controller (54) which is connected to fuel injector (42) and connected to NO<sub>x</sub> sensor (50), therefore, Kair's apparatus is capable of performing as claimed.

Regarding limitations recited in claims 20-23 which are directed to a manner of operating disclosed device, neither the manner of operating a disclosed device nor material or article worked upon further limit an apparatus claim. Said limitations do not differentiate apparatus claims from prior art. See MPEP § 2114 and 2115. Further, process limitations do not have patentable weight in an apparatus claim. See *Ex parte Thibault*, 164 USPQ 666, 667 (Bd. App. 1969) that states "Expressions

relating the apparatus to contents thereof and to an intended operation are of no significance in determining patentability of the apparatus claim."

With respect to claim 25, Khair teaches wherein the sensor arrangement includes a temperature sensor arranged at one of the locations ahead of, and downstream of, the particle filter for determining the exhaust gas temperature at the particular locations (col. 5, lines 42-49).

### ***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 24 and 26-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Khair et al. (US 6,293,096), as applied to claim 20, and further in view of Held (US 6,531,099 B1) and in view of WO 00/21647.

With respect to claims 24 and 26, Khair discloses all claim limitations as set forth above but fails to show wherein said sensor arrangement includes a lambda sensor arranged downstream of the particle filter. Held teaches an oxide adsorber (fig. 1, 1) arranged in an internal combustion engine exhaust system for storing oxides of nitrogen and sulfur and the regeneration thereof wherein a sensor arrangement includes a lambda sensor/probe (11) arranged in the exhaust gas pipe in order to provide signals proportionate to the oxygen concentration.

Khair et al discloses provision of using a sensor 50, 150, downstream of the filter and nitrogen oxide store for sensing nitrogen oxide content, but is silent as to whether more than one may be provided and the specific type of the sensor, e.g. a lambda probe and pressure sensor. Held discloses the conventionality of providing lambda probes in controlling the purification system. Further, WO '647 teaches an apparatus for treating combustion exhaust gas systems including a NOx adsorber and discloses provision of a plurality of sensors, including a pressure sensor, in the system (see, for example, page 6, line 32 to page 7, line 5).

It would have been obvious to one having ordinary skill in the art to select an appropriate sensor, such as lambda probe and pressure sensor, in controlling the purification system of Khair et al, as taught by Held, in order to provide signals proportionate to the oxygen concentration and as use of such is conventional in the art and no cause for patentability here.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to select an appropriate location for each sensor, since it has been held that rearranging parts of an invention involves only routine skill in the art. *In re Japikse*, 86 USPQ.

With respect to claim 27, Khair discloses all claim limitations as set forth above but fails to show wherein said wherein the particle filter is provided with a coating having at least one of an oxidation catalytic converter function enhancing and a soot oxidation function enhancing property. However, WO 00/21647 discloses the conventionality of providing a filter having a coating of alumina and catalyst.

Art Unit: 1764

It would have been obvious to one having ordinary skill in the art to provide a coating, as taught by WO 00/21647, in the apparatus of Khair et al. in order to assist the converting of soot particles.

### ***Response to Arguments***

#### Objection

Objection made to claims 10-19 regarding the word "diesel" is withdrawn due to applicant's amendment.

#### 35 USC 112 Rejection

Rejection made to the claims under 35 USC 112 Second Paragraph is maintained as set forth above.

An additional rejection to claim 20 is made under 35 USC 112 First Paragraph as set forth above, this rejection emphasizes the one made under 35 USC 112 Second Paragraph in the prior Office Action as well as above.

#### Drawings

Objection made to the drawings is withdrawn by examiner due to applicant's amendment.

#### Prior Art Rejection

Applicant argues that Khair et al. (US 6,293,096) is not concerned with the regeneration of sulfur. Examiner respectfully disagrees. Khair's NO<sub>x</sub> adsorber is the same as that disclosed in Murachi's et al. (Khair col. 1, lines 45-67) wherein said NO<sub>x</sub> trap (Murachi's fig. 1, 9) also adsorbs SO<sub>3</sub> (see Murachi col. 8, lines 32-45) and



Art Unit: 1764

is regenerated by increasing the amount of fuel injected (col. 8, lines 11-14) thereby increasing the temperature of said NOx trap and releasing SO<sub>3</sub> (22) (col. 8, lines 43-64). Khair's regeneration of the NOx trap similarly involves increasing the amount of fuel (col. 2, lines 25-38 and lines 55-65), which in turn releases NOx and sulfur as in Murachi's. Therefore, Khair's apparatus is concerned with the regeneration of sulfur and is capable of performing such regeneration given that his apparatus is capable of controlling fuel injection (via controller (54) and fuel injector (40)) based on process information provided by the sensor arrangement as set forth above.

Applicant's arguments with respect to claim 20 have been considered but are moot in view of the new ground(s) of rejection as necessitated by amendment.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

Art Unit: 1764

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kaity Handal whose telephone number is (571) 272-8520. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on (571) 272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

KH

\*\*\*

2/7/2007

  
Glenn Caldarola  
Supervisory Patent Examiner  
Technology Center 1700